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Sedative and anticonvulsant effects of hydroalcoholic extract of *Equisetum arvense*

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Abstract

The hydroalcoholic extract of *Equisetum arvense* (HAE) tested at the doses of 200 and 400 mg/kg showed a significant activity on the open-field, enhanced the number of falls in the rota-rod reducing the time of permanence in the bar and increased the sleeping time (46% and 74%) in the barbiturate-induced sleeping time. In the pentylenetetrazole-seizure, it increased the first convulsion latency, diminished the severity of convulsions, reduced the percentage of animals which developed convulsion (50% and 25%) and protected animals from death. On the contrary, in the elevated plus maze, the doses 50, 100 and 150 mg/kg did not affect the evaluated parameters. Thus, HAE presented anticonvulsant and sedative effects. Phytochemical analysis detected the presence of tannins, saponins, sterols and flavonoids.

Keywords: Hydroalcoholic extract; *Equisetum arvense*; CNS

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1. Introduction

Equisetum arvense L. (Equisetaceae, traditional name:"horsetail") is a plant showing aerial stems, branched with regular verticilies 2–23 mm in diameter, terminal strobile in the branches and in the main stem (10-mm long and 4 mm in diameter). It glowed in several regions of Europe and North, Central and South America [1]. Several studies showed a hypoglycemic [2,3] and diuretic activity [4–8] of some species of horsetail. In contrast, less is know about the role of *E. arvense* in central nervous system.

The few available reports indicate that equine and bovine intoxication with *E. arvense* are characterized by a short period of excitation (irritability, tremor and ataxia), followed by a period of sedation [9,10]. The aim of this work was to investigate the CNS activity of *E. arvense*, studying the effect of its hydroalcoholic extract (HAE) in rats.

2. Experimental

2.1. Plant material

E. arvense, collected in Santa Catarina State, Brazil, during the summer of 2002, was identified by Dra. Claudete Schrage Nuernberg, Department of Agricultural Botanic, State University of Santa Catarina, Lages, Brazil. A voucher sample has been deposited in the Herbarium of the Medicinal Plants of the State University of Santa Catarina.

2.2. Preparation of the hydroalcoholic extract

E. arvense dried and minced stems were extracted with 50% EtOH–water at 21 ± 3 °C for 15 days. Ethanol was evaporated and the extract obtained was stored at -20 °C.

2.3. Animals

Male Wistar rats (200–250 g) obtained from the Animal House of the State University of Santa Catarina were used. All animals were maintained under controlled temperature (23 ± 1 °C) and a 12 h dark/light cycle (light on at 07:00 am). They were fed with standard rodent diet and water available ad libitum.

2.4. Behavioral tests

2.4.1. Open field test

Open field test was used to evaluate the exploratory activity and emotional response of the animals. The apparatus consists of an arena of white wood (150 cm diameter) enclosed by stainless steel walls and divided in 19 squares by black lines. The open field was placed inside a light- and sound-attenuated room. The animals received intraperitoneally saline or HAE at doses of 50, 100, 200 or 400 mg/kg. After 30 min, each animal was placed in the center of the arena, and during the following 5 min were observed; the number of squares crossed (with four paws), rearing and latency for the first crossing (as measures of